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EXAMINER	
DOTE, JANIS L	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,770	MOCHIZUKI ET AL.	
	Examiner	Art Unit	
	Janis L. Dote	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-15 and 17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-15 and 17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The examiner acknowledges the amendments to claims 1, 6, 11, 12, and 17, and the cancellation of claims 22-25 set forth in the amendment filed on May 10, 2006. Claims 1-9, 11-15, and 17-20 are pending.

2. The objection to the specification set forth in the office action mailed on Dec. 13, 2005, paragraph 4, has been withdrawn in response to the amended paragraph beginning at page 109, line 12, of the instant specification, filed on May 10, 2006.

The rejection of claims 1-9, 11-15, and 17-20 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Dec. 13, 2005, paragraph 7, has been withdrawn in response to the amendments to claims 1, 6, 12, and 17 filed on May 10, 2006. The examiner notes that according to the instant specification, the definition of the term "degree of roundness" recited in instant claims 1, 6, 12, and 17 appears to be only applicable when the average degree of roundness is determined by an image processing software for statistically analyzing photographs of particles obtained from a scanning electron microscope or a transmission electron microscope. See the instant specification, page 36, line 12, to page 37, line 11.

The rejections of claims 1-9, 11-15, 17-20, and 22-25 under 35 U.S.C. 112, first paragraph, set forth in the office action

mailed on Dec. 13, 2005, paragraph 9, have been withdrawn in response to the amendment to claims 1, 6, 11, 12, and 17 filed on May 10, 2006.

The objections to claims 1-9, 11-15, 17-20, and 22-25 set forth in the office action mailed on Dec. 13, 2005, paragraph 10, have been withdrawn in response to the amendments to claims 1, 6, 12, and 17 filed on May 10, 2006.

3. The examiner notes that the instant specification at page 69, lines 9-23, discloses that the parameters SF-1 and SF-2 recited in the instant claims are determined from the following equations 1 and 2:

Equation 1. SF-1 = ((absolute maximum length of a toner particle)^2/ projection area of a toner particle) x (π/4) X 100

Equation 2. SF-2 = (peripheral length of toner particle)^2/ (projection area of a toner particle) x (π/4) X 100

In other words, the "area of the particle of the base toner" in the formulas recited in the instant claims is a "projection area" of the toner base.

The examiner also notes that the average degree of roundness recited in instant claims 1, 6, 12, and 17 as the "arithmetic mean" of the degree of roundness of the inorganic fine particles, where the degree of roundness is defined as "a

peripheral length" of a circle having an area equal to an area of a binarized particle image of an inorganic particle divided by the length of an outlined portion obtained by connecting the edge points of a binarized particle image of the inorganic particle. Antecedent basis for this definition can be found at page 36, lines 16-17, and page 37, lines 1-11, of the instant specification.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 2, 5-7, 11, 17, and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 5,827,632 (Inaba'632), as evidenced by applicants' admission in the instant specification at page 37, lines 11-22, and the tables at page 115, embodiment 7, and the accompanying text (applicants' admissions I).

Inaba'632 discloses a developer comprising a magnetic carrier and a toner. The toner comprises toner particles comprising a binder resin and a cyan colorant, hydrophobic inorganic fine powder a-1, and hydrophobic silicon compound fine powder (A). The toner particles have a shape factor SF-1 of 109

and a shape factor SF-2 of 120. The shape factors SF-1 and SF-2 are determined in the same manner as recited in the instant claims. Col. 7, line 57, to col. 8, line 6. The hydrophobic silicon compound fine powder (A) comprises silica particles and has an average particle diameter of 40 nm. Col. 27, lines 5-8; Table 1, hydrophobic silicon compound fine powder (A); and example 7 at cols. 31-32. The toner particles have a weight average particle diameter of 7.7 μm. The hydrophobic silicon compound fine powder (A) has an average particle diameter of 40 nm that meets the particle size limitations recited in instant claims 1, 6 and 17. The shape factors SF-1 and SF-2 are within the respective ranges recited in instant claims 1, 6, and 17. Inaba'632 further teaches that the colorant can be a black colorant, a yellow colorant, or a magenta colorant. Col. 5, lines 12-16.

Inaba'632 further discloses an image forming apparatus comprising a developing unit **74** that comprises a plurality of developing units, wherein each of the units comprises a developer that comprises a toner having a different colorant as recited in instant claim 11, and a transfer unit **77**. Fig. 7; col. 21, line 45, to col. 24, line 29. The apparatus meets the components recited in instant claims 6 and 11. Inaba'632 also discloses an image forming method comprising the steps recited

in instant claim 17, where the developer described above is used to develop the latent image formed on the photoconductor. Fig. 7, col. 21, line 45, to col. 24, line 29; and Table 5 at col. 35, example 7.

Inaba'632 does not disclose that the toner particles of example 7 have a volume average particle size of 2 to 8 μm as recited in instant claims 1, 6, and 17. However, as discussed above the toner particles in example 7 of Inaba'632 have a weight-average particle size of 7.7 μm. The particle size value of 7.7 μm is within the numerical range of the volume average particle size recited in instant claims 1, 6, and 17. Thus, based on the presumption that the toner particles have uniform density, it would be reasonable to conclude that the toner particles in example 7 of Inaba'632 have a volume average particle size of 7.7 μm. Accordingly, the burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Inaba'632 does not disclose that the hydrophobic silicon compound fine powder (A) has an average degree of roundness as recited in instant claims 1, 6, and 17. However, the instant specification at page 37, lines 11-23, discloses that "[i]n a case where the average degree of roundness of the silica particle is below 0.95, fluidity of [the] toner, supply property

of [the] toner, and preservation property of [the] toner shall decrease. In a case where the average degree of roundness of the silica particle is above 0.996, retaining silica particles on the toner surface shall become difficult, affinity between the silica particles and the toner shall decrease, the silica particles shall be unable to function as external additives, storing property and chargeability with respect to environment shall deteriorate, to thereby affecting the image." The instant specification shows that when a developer comprises inorganic fine particles having an average degree of roundness of 0.990, the developer exhibits good cleaning properties and toner transfer rate, and provides images without blanks. See the tables at page 115, embodiment 7, and the accompanying text. The developer in example 7 of Inaba'632 exhibits stable charging properties under several different environmental conditions. The Inaba'632 developer exhibits good anti-blocking properties (i.e., storing or preservation property), and high transfer efficiency. The developer also exhibits good cleaning properties and provides images without white dropout. See Table 5 at col. 35, example 7, and the accompanying text. These are the properties sought by applicants. Thus, because the Inaba'632 developer in example 7 appears to exhibit the properties sought by applicants, it is reasonable to presume

that the Inaba'632 inorganic fine powder (A) has an average roundness as recited in instant claims 1, 6, and 17. The burden is on applicants to prove otherwise. Fitzgerald, supra.

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0118366 (Nukada) combined with Inaba'632, as evidenced by applicants' admissions I.

Nukada discloses a process cartridge comprising a particular photoreceptor. Nukada discloses that the cartridge may further contain units appropriately selected from the charging unit, the exposing unit, the developing unit, the transferring unit, and the cleaning unit previously described in Nukada. Paragraph 0115, lines 1-7. Nukada further discloses that the developing unit may be a unit in which development is conducted with a two-component developer that comprises a toner and carrier. Paragraph 0110, lines 1-12. Thus, Nukada teaches a process cartridge that comprises a charging unit, an exposing unit, a developing unit, a transfer unit, and a cleaning unit.

Nukada does not disclose the use of a developer as recited in the instant claim. However, as discussed supra, Nukada discloses that the developing unit may comprise a developer comprising a toner and a carrier.

Inaba'632, as evidenced by applicants' admissions I, discloses a developer comprising a toner and a carrier as described in paragraph 5, supra. The developer meets the developer limitations recited in instant claims 12 and 13. The discussions of Inaba'632 and applicants' admissions I in paragraph 5 above are incorporated herein by reference. According to Inaba'632, the developer has excellent performance in continuous image formation on a large number of sheets. Col. 2, lines 21-24, and Table 5, example 7.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Inaba'632, to use the developer in example 7 of Inaba'632 as the developer in the process cartridge disclosed by Nukada. That person would have had a reasonable expectation of successfully obtaining a process cartridge that provides continuous image formation on a large number of sheets.

7. Claims 1, 4-6, 9, 11, 17, and 20 are rejected under 35 U.S.C. 103(a) as obvious over Inaba'632, as evidenced by applicants' admissions I.

Inaba'632 discloses a developer, an image forming apparatus, and method of forming an image, as described in paragraph 5 above, which is incorporated herein by reference.

As discussed in paragraph 5, the developer disclosed by Inaba'632 comprises toner particles, hydrophobic inorganic fine powder a-1, and hydrophobic silicon compound fine powder (A). The hydrophobic silicon compound fine powder (A) comprises silica particles and has an average particle diameter of 40 nm. The hydrophobic inorganic fine powder a-1 has an average particle diameter of 51 nm. Table 1 at col. 30, fine powder a-1. The fine powder a-1 meets the inorganic fine powder particle size limitation recited in instant claims 1, 6, and 17. The hydrophobic silicon compound fine powder (A) meets the "further inorganic fine particles" limitation recited in instant claims 4 and 9.

Inaba'632 does not disclose that the hydrophobic inorganic fine powder a-1 has an average degree of roundness as recited in instant claims 1, 6, and 17. However, the instant specification at page 37, lines 11-23, discloses that if the degree of roundness is below 0.95, "fluidity of [the] toner, supply property of [the] toner, and preservation property of [the] toner shall decrease"; and that if the average degree of roundness is above 0.996, "retaining silica particles on the toner surface shall become difficult, affinity between the silica particles and the toner shall decrease, the silica particles shall be unable to function as external additives,

storing property and chargeability with respect to environment shall deteriorate, to thereby affecting the image." The discussion of the instant specification in paragraph 5 above is incorporated herein by reference. The developer in example 7 of Inaba'632 exhibits stable charging properties under several different environmental conditions. The Inaba'632 developer exhibits good anti-blocking properties (i.e., storing or preservation property), and high transfer efficiency. The developer also exhibits good cleaning properties and provides images without white dropout. See Table 5 at col. 35, example 7, and the accompanying text. These are the properties sought by applicants. Thus, because the Inaba'632 developer in example 7 appears to exhibit the properties sought by applicants, it is reasonable to presume that the inorganic fine powder a-1 has an average roundness as recited in instant claims 1, 6, and 17. The burden is on applicants to prove otherwise. Fitzgerald, supra.

8. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nukada combined with Inaba'632, as evidenced by applicants' admissions I.

Nukada discloses a process cartridge as described in paragraph 6 above, which is incorporated herein by reference.

Nukada does not disclose the use of a developer as recited in the instant claims.

Nukada does not disclose the use of a developer as recited in the instant claims. However, as discussed in paragraph 6 above, Nukada discloses that the developing unit may comprise a developer comprising a toner and a carrier.

Inaba'632, as evidenced by applicants' admissions I, discloses a developer comprising a toner and a carrier as described in paragraph 7, supra. The developer meets the developer limitations recited in instant claims 12 and 15. The discussions of Inaba'632 and applicants' admissions I in paragraph 7 above are incorporated herein by reference. According to Inaba'632, the developer has excellent performance in continuous image formation on a large number of sheets. Col. 2, lines 21-24, and Table 5, example 7.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Inaba'632, to use the developer in example 7 of Inaba'632 as the developer in the process cartridge disclosed by Nukada. That person would have had a reasonable expectation of successfully obtaining a process cartridge that provides continuous image formation on a large number of sheets.

9. Applicants' arguments filed on May 10, 2006, with respect to the rejections over Inaba'632 set forth in paragraphs 5-8 above have been fully considered but they are not persuasive.

(The examiner notes that the rejections in paragraphs 7 and 8 are not redundant to those in paragraphs 5 and 6, respectively, as alleged by applicants. For the reasons discussed in the rejections in paragraphs 5 and 6, the Inaba'632 hydrophobic silicon compound fine powder (A) meets the inorganic particles having the particular roundness recited in the instant claims. However, for the reasons discussed in paragraphs 7 and 8, the Inaba'632 hydrophobic inorganic fine powder a-1 meets the inorganic particles having the particular roundness recited in the instant claims; while the hydrophobic silicon compound fine powder (A) meets the "further inorganic fine particles" limitation recited in instant claims 4, 9, and 15. See, for example, paragraph 7, page 10, lines 8-12, above.)

Applicants assert that it is not reasonable to presume that the Inaba'632 hydrophobic silicon compound fine powder (A) or the Inaba'632 hydrophobic inorganic fine particles a-1 have the roundness recited in the instant claims for the following reasons: (1) the toner in comparative example 2 of the instant application is within the Inaba'632 SF-1 and SF-2 requirements,

yet is "defective in at least one of the evaluated properties described in the instant specification"; (2) any improved results described in Inaba'632 "could be, and likely are, at least in part, due to the inventive particle size distribution of their silicon compound fine powder (A) combined with the presence of their hydrophobized inorganic fine powder, rather than any degree of roundness of their silicon compound fine powder"; (3) the Inaba'632 toner in example 7 has a weight-average particle size of 7.7 μm, not a volume average particle size as recited in the instant claims; and (4) the other Inaba toner examples do not meet the SF-1 and SF-2 limitations recited in the instant claims, "yet they are described as producing similar results to Example 7" of Inaba.

Applicants' assertions are not persuasive. For the reasons discussed in the rejections in paragraphs 5 and 7 above, the examiner has carried the burden to show that the preponderance of evidence on the present record shows that the Inaba'632 hydrophobic silicon compound fine powder (A) or the Inaba'632 hydrophobic inorganic fine powder a-1, respectively, has the required degree of roundness. At best, applicants' assertions indicate that there is a possibility that the Inaba'632 hydrophobic silicon compound fine powder (A) or the Inaba'632 hydrophobic inorganic fine powder a-1 does not have the required

degree of roundness. Applicants have not come forward with any objective evidence to show that the Inaba'632 hydrophobic silicon compound fine powder (A) or the hydrophobic inorganic fine powder a-1 does not have the required degree of roundness recited in the instant claims.

Furthermore, with respect to applicants' reasons (1) and (4), as discussed in the rejections in paragraphs 5 and 7 above, the Inaba'638 toner in example 7 has an SF-1 value and an SF-2 value that are within the SF-1 and SF-2 values recited in the instant claims. Each and every example exemplified in the prior art is available to the skilled worker in the art. Moreover, the toner in comparative example 2 of the instant specification is not within the teachings of Inaba'632 as alleged by applicants. That toner does not comprise the Inaba'632 hydrophobic silicon compound fine powder (A) and hydrophobic inorganic fine powder a-1, which are described by Inaba'632 as being critical elements of its invention. See Inaba'632, col. 2, lines 35-47. Furthermore, the toner in comparative example 2 exhibits a cleaning property that is evaluated as "X," where the measured amount of residual toner on the photoconductor is "no less than 0.08" and burial level of the external additive evaluated as "X," where "X is the most unfavorable level." As discussed in the rejections in

paragraphs 5 and 7, the Inaba'632 toner in example 7 exhibits good cleaning properties. Inaba'632 discloses that "no cleaning failure" occurred for 500,000 images. Col. 25, lines 24-38, and Table 5, example 7. In addition, after forming 500,000 images, "no embedding" of the externally added additives was observed on the surface of the toner particles in the Inaba'632 toner in example 7. Col. 27, lines 18-26, and Table 5, example 7. Thus, even if the evaluations used in Inaba'632 were not identical to those used in the instant specification, the preponderance of evidence shows that the Inaba'632 toner in example 7 does not provide the properties exhibited by comparative example 2.

In addition, applicants' reason (2) is mere attorney argument. Although Inaba'632 may attribute its toner properties to the particle distribution of its hydrophobic silicon compound fine powder (A) and hydrophobic inorganic fine powder a-1, applicants have not come forward with any objective evidence to show that the results in Inaba'638 are not due to the degree of roundness of the Inaba'632 hydrophobic silicon compound fine powder (A) or of the Inaba'632 hydrophobic inorganic fine powder a-1.

Furthermore, with respect to applicants' reason (3), for the reasons discussed in rejections in paragraphs 5 and 7, it is reasonable to conclude that the Inaba'632 toner in example 7 has

a volume average particle size of 7.7 μm. There is no objective evidence on the present record to show otherwise.

Applicants further assert that it is not proper "for the Examiner to equate qualitative expressions of results, such as 'good' cleaning property and toner transfer rate, between the specification herein, and the prior art, to find that means to obtain the results are quantitatively the same, such as a particular degree of roundness range." Applicants also assert that it is not proper to use applicants' comparative data, which is not prior art, against them.

However, the examiner is merely using the available evidence of record to determine whether or not it is reasonable to transfer the burden to applicants to distinguish over prior art toners. Such prior art toners are deemed to be the ones that meet all of the expressed structural and compositional limitations in the claims, and that disclose properties that are consistent with the properties taught by applicants as advantages due to comprising inorganic fine particles having an average degree of roundness of 0.98 to 0.996. Patents covering compositions of matter are not properly issued for the discovery of a previously unknown or unrecognized property of an old material.

Furthermore, for the reasons set out in the rejections in

paragraphs 5 and 7 above, a prima facie case has been established that the Inaba'632 hydrophobic silicon compound fine powder (A) or the hydrophobic inorganic fine powder a-1, respectively, meets the average degree of roundness recited in the instant claims. Since the PTO cannot conduct tests, the burden is properly shifted to applicants to come forward with objective evidence to distinguish the claimed subject matter with the reference material. Applicants have not provided any objective evidence to show that the Inaba'632 hydrophobic silicon compound fine powder (A) or the hydrophobic inorganic fine powder a-1 in example 7 does not have the required degree of roundness recited in the instant claims. Thus, for the reasons discussed above and in the rejections, it is reasonable to presume that the hydrophobic silicon compound fine powder (A) or the hydrophobic inorganic fine powder a-1 in the Inaba'632 toner in example 7 has the degree of roundness recited in the instant claims. Applicants have not met their burden to show otherwise. Accordingly, the rejections over Inaba'632 in paragraphs 5-8 stand.

10. Claims 1-5 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,712,072 (Inaba'072) combined with

US 6,403,271 B1 (Suzuki), as evidenced by applicants' admission I.

Inaba'072 discloses developers comprising a magnetic carrier and a color toner. The color toner comprises: color toner particles, which comprise a binder resin, a charge control agent, a release agent, and a colorant; and hydrophobic silica powder. Col. 17, line 59, to col. 18, line 52, and example 9 at col. 20, lines 48-54, and in Table 3 at cols. 19-20. The cyan-colored toner particles in example 9 have a weight-average particle diameter of 6.3 μm. The cyan-colored toner particles in example 9 have a shape factor SF-1 of 115 and a shape factor SF-2 of 120. The shape factors SF-1 and SF-2 are determined in the same manner as recited in the instant claims. Col. 13, lines 10-22 and 50-62. The shape factors SF-1 and SF-2 are within the respective ranges recited in instant claims 1 and 17.

Inaba'072 also discloses an image forming method comprising the steps recited in instant claim 17, but for the use of a developer comprising the particular inorganic fine particles recited in instant claim 17. Col. 1, lines 11-47, and col. 16, lines 4-9, and 18-46.

Inaba'072 does not disclose that the toner particles of example 9 have a volume average particle size of 2 to 8 μm as recited in instant claims 1 and 17. However, as discussed above

the toner particles in example 9 of Inaba'072 have a weight-average particle size of 6.3 μm. The particle size value of 6.3 μm is within the numerical range of the volume average particle size recited in instant claims 1 and 17. Thus, based on the presumption that the toner particles have uniform density, it would be reasonable to conclude that the toner particles in example 9 of Inaba'072 have a volume average particle size of 6.3 μm. Accordingly, the burden is on applicants to prove otherwise. Fitzgerald, supra.

Inaba'072 does not exemplify the use of the inorganic fine particles as recited in instant claims 1 and 17. However, as discussed above, Inaba'072 developer comprises an externally added hydrophobic silica powder. Inaba'072 does not limit the type of silica powder used. Inaba'072 teaches that "any flowability improving agent, such as silica . . . " may be used in its toner. Col. 14, lines 41-42.

Suzuki teaches developers comprising toner particles combined with (1) monodisperse hydrophobic spherical silica particles B obtained by a sol-gel method having an average particle size of 80 nm; and (2) inorganic particles obtained by subjecting metatitanic acid ($TiO(OH)_2$) to an isobutyltrimethoxysilane treatment, which have an average particle size of 35 nm. See monodisperse spherical silica B at

col. 17, lines 35-40, and example 2 at col. 22. The hydrophobic spherical silica particles B taught by Suzuki meet the particle size and compositional limitations regarding the inorganic fine particles recited in instant claims 1-3 and 17-19. The inorganic particles obtained by subjecting metatitanic acid ($TiO(OH)_2$) to an isobutyltrimethoxysilane treatment meet the "further inorganic fine particles" limitation recited in instant claims 4 and 20. According to Suzuki, the use of the hydrophobic spherical silica particles B provides a developer in which "the toner flowability, charging property, the developing property, the transferring property, and the fixing property are simultaneously satisfied in a long period of time." Col. 4, line 48, to col. 5, line 5. Suzuki further discloses that the use of the inorganic particles comprising metatitanic acid ($TiO(OH)_2$) can provide developers that are excellent in charging property, environment stability, flowability, caking resistance, stable negative charging property, and "stable image quality maintenance property." Col. 10, lines 39-43.

Suzuki does not disclose that the monodisperse hydrophobic spherical silica particles B have an average degree of roundness as recited in instant claims 1 and 17. However, the instant specification at page 37, lines 11-23, discloses that if the degree of roundness is below 0.95, "fluidity of [the] toner,

supply property of [the] toner, and preservation property of [the] toner shall decrease"; and that if the average degree of roundness is above 0.996, "retaining silica particles on the toner surface shall become difficult, affinity between the silica particles and the toner shall decrease, the silica particles shall be unable to function as external additives, storing property and chargeability with respect to environment shall deteriorate, to thereby affecting the image." The discussion of the instant specification in paragraph 5 above is incorporated herein by reference. As discussed supra, the Suzuki hydrophobic spherical silica particles B are obtained by a process within the process limitations recited in claims 3 and 19. Suzuki teaches that the use of the hydrophobic spherical silica particles B provides a developer in which "the toner flowability, charging property, the developing property, the transferring property, and the fixing property are simultaneously satisfied in a long period of time." Col. 4, line 48, to col. 5, line 5. Suzuki teaches that because the hydrophobic spherical silica particles are monodisperse and spherical, the particles are uniformly dispersed on the surface of the toner particles. Col. 7, lines 46-49. Suzuki shows that when the developer comprises the hydrophobic spherical silica particles B, the developer exhibits good charging properties

under different environmental conditions. The developer also exhibits good transfer efficiency. See Tables 1 and 2 at col. 25, example 2, and the accompanying text. The properties sought by Suzuki are the same properties sought by applicants. Thus, because the Suzuki hydrophobic spherical silica particles B are obtained by a process within the process limitations recited in instant claims 3 and 19, and because developers comprising the Suzuki hydrophobic spherical silica particles B appear to exhibit the properties sought by applicants, it is reasonable to presume that the Suzuki hydrophobic spherical silica particles B have an average roundness as recited in instant claims 1 and 17. The burden is on applicants to prove otherwise. Fitzgerald, supra.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Suzuki, to use the hydrophobic spherical silica particles B and metatitanic acid inorganic particles taught by Suzuki as the external additive in the developer disclosed by Inaba'072. That person would have had a reasonable expectation of successfully obtaining color developers having satisfactory toner flowability, charging property, the developing property, the transferring property, and the fixing property for a long period of time. It also would have been obvious for that person to use the resultant

developers in the image forming method disclosed by Inaba'072, because that person would have had a reasonable expectation of successfully obtaining an image forming method that provides satisfactory toner images for a long period of time.

11. Claims 6-9 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nukada combined with Inaba'072 combined with Suzuki, as evidenced by applicants' admissions I.

Nukada discloses a process cartridge as described in paragraph 6 above, which is incorporated herein by reference.

Nukada also discloses an imaging apparatus that comprises a particular photoreceptor **10**, i.e., an electrostatic latent image carrier; a contact charging device **11**; a laser exposing optical system **12**, i.e., an irradiator; a developing unit **13**; a transfer unit **14**; a fixing roll unit **16**; and a cleaning unit **15** comprising a cleaning blade. Fig. 6, and paragraphs 0112-0113. Nukada discloses that the developing unit may be a unit in which development is conducted with a two-component developer that comprises a toner and carrier. Paragraph 0110, lines 1-12.

Nukada does not disclose the use of a developer as recited in the instant claims. However, as discussed in paragraph 6 and above, Nukada discloses that the developing unit in the process

cartridge and in the image forming apparatus may comprise a developer comprising a toner and a carrier.

The teachings of Inaba'072 combined with the teachings of Suzuki, as evidenced by applicants' admission I, render obvious a developer as described in paragraph 10 above, which is incorporated herein by reference. The developer meets the developer limitations recited in instant claims 6-9 and 12-15. In addition, according to Inaba'072, its color developer has a "large coloring strength," excellent offset resistance on fixing, and blocking resistance. Col. 2, lines 61-67; and Table 4 at cols. 21-22, example 9.

It would have been obvious for a person having ordinary skill in the art to use the developer rendered obvious over the combined teachings of Inaba'072 and Suzuki as the developer in the process cartridge and the image forming apparatus disclosed by Nukada. That person would have had a reasonable expectation of successfully obtaining a process cartridge and an image forming apparatus that provide toner images that have a large coloring strength and excellent offset resistance on fixing as disclosed by Inaba'072, and that provide satisfactory images for a long period of time as disclosed by Suzuki.

12. Applicants' arguments filed on May 10, 2006, with respect to the rejections in paragraphs 10 and 11 above have been fully considered but they are not persuasive.

Applicants assert that it is not reasonable to presume that Suzuki silica particles B have the roundness recited in the instant claims for the following reasons: (1) because the other examples in Suzuki use other monodisperse spherical silica that are described as producing comparable results to example 2, the results in example 2 of Suzuki "cannot be assumed to be because of the degree of roundness, as opposed to the particles being monodisperse or having the requisite true specific gravity"; (2) "why absent of the present disclosure as a guide, would one select Example 9 of Inaba'072 out of all of the examples in Inaba'072 to combine with Suzuki?"

Applicants' assertions are not persuasive. For the reasons discussed in the rejection in paragraph 10 above, the examiner has carried the burden to show that the preponderance of evidence on the present record shows that the Suzuki spherical hydrophobic silica particles (B) have the required degree of roundness. At best, applicants' assertions indicate that there is a possibility that the Suzuki spherical hydrophobic silica particles (B) do not have the required degree of roundness. Applicants have not come forward with any objective evidence to

show that the Suzuki spherical hydrophobic silica particles (B) do not have the required degree of roundness recited in the instant claims.

Furthermore, with respect to applicants' reasons (1) and (2), as discussed in the rejection in paragraph 10 above, the Inaba'072 toner in example 9 has an SF-1 value and an SF-2 value that are within the SF-1 and SF-2 values recited in the instant claims. Each and every example exemplified in the prior art is available to the skilled worker in the art. Although Suzuki may attribute its results to other properties of its spherical hydrophobic silica particles, applicants have not come forward with any objective evidence to show that the results in Suzuki are not due to the degree of roundness of the Suzuki spherical hydrophobic silica particles B. Furthermore, the Suzuki spherical hydrophobic silica particles B are also preferred. They have a preferred Wadell spherical degree of 0.90 and a preferred standard deviation of volume average particle diameter of 13 nm. See Suzuki, col. 7, lines 50-54, which discloses that the standard deviation of the average particle diameter is preferably a standard deviation of $0.22D_{50}$ where D_{50} is the volume average particle diameter; and col. 7, lines 54-57, which discloses that the monodisperse spherical

silica particles have a preferred Wadell spherical degree of 0.8 or more.

Moreover, for the reasons discussed in rejection in paragraph 10, it is reasonable to conclude that the Inaba'072 toner in example 9 has a volume average particle size of 6.3 μm. There is no objective evidence on the present record to show otherwise.

Applicants' comments regarding the "Examiner's reliance on Applicants' so-called admissions" have been addressed in paragraph 9 above. For the reasons set out in the rejections in paragraphs 10 and 11 above, a prima facie case has been established that the Suzuki spherical hydrophobic silica particles B meet the average degree of roundness recited in the instant claims. Since the PTO cannot conduct tests, the burden is properly shifted to applicants to come forward with objective evidence to distinguish the claimed subject matter with the reference material. Applicants have not provided any objective evidence to show that the Suzuki spherical hydrophobic silica particles B do not have the required degree of roundness recited in the instant claims. Thus, for the reasons discussed above and in the rejections, it is reasonable to presume that the Suzuki spherical hydrophobic silica particles B have the degree of roundness recited in the instant claims. Applicants have not

met their burden to show otherwise. Accordingly, the rejections over the cited prior art in paragraphs 10 and 11 stand.

13. The amendment to claims 1, 6, 12, and 17 filed on May 10, 2006, deleting the limitation, SF-1 < SF-2, reinstates the rejections over US 6,177,223 B1 (Hayashi). Those rejections were previously withdrawn in response to the addition of the now-cancelled limitation in claims 1, 6, 12, and 17. See the office action mailed on Dec. 12, 2005, paragraph 3.

14. Claims 1-9, 11, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,177,223 B1 (Hashimoto) combined with Suzuki, as evidenced by applicants' admission I.

Hashimoto discloses developers comprising a magnetic carrier and a color toner. The color toner comprises color toner particles, which comprise a binder resin, a release agent, and a colorant, and hydrophobic silica powder. Col. 29, lines 27-34 and 55-63; and Table 1 at col. 34, toners A2, A3, and A4. The magenta-colored toner particles of toner A2 have a shape factor SF-1 of 127 and a shape factor SF-2 of 123. The cyan-colored toner particles of toner A3 have a shape factor SF-1 of 123 and a shape factor SF-2 of 121. The yellow-colored toner particles of toner A4 have a shape factor SF-1 of 130 and

a shape factor SF-2 of 120. The shape factors SF-1 and SF-2 are determined in the same manner as recited in the instant claims. Col. 14, lines 12-28. The shape factors SF-1 and SF-2 are within the respective ranges recited in instant claims 1, 6, and 17.

Hashimoto further discloses an image forming apparatus comprising a developing unit **4** comprising a plurality of developing units that comprise the developers described above and a transfer unit **7**. Fig. 1; col. 21, line 18, to col. 22, line 44; and col. 34, lines 46-50. The plurality of developing units comprise the toners A2, A3, and A4, which meet the limitation that the developers each comprise a different color as recited in instant claim 11. Hashimoto also discloses an image forming method comprising the steps recited in instant claim 17, but for the use of a developer comprising the particular inorganic fine particles recited in instant claim 17. The developers described above are used to develop the latent image formed on the photoconductor. Fig. 1, and col. 34, line 46, to col. 35, line 32.

Hashimoto does not disclose that the toner particles in toners A2, A3, and A4 have a volume average particle size of 2 to 8 μm as recited in instant claims 1 and 17. However, as discussed above the toner particles in toners A2, A3, and A4

have a weight-average particle size of 6.9 μm, 7.1 μm, and 7.1 μm, respectively. See Table 1. The particle size values of 6.9 μm and 7.1 μm are within the numerical range of the volume average particle size recited in instant claims 1, 6, and 17. Thus, based on the presumption that the toner particles have uniform density, it would be reasonable to conclude that the toner particles in toners A2, A3, and A4 of Hashimoto Inaba'072 have a volume average particle size of 6.9 μm, 7.1 μm, and 7.1 μm, respectively. Accordingly, the burden is on applicants to prove otherwise. Fitzgerald, supra.

Hashimoto does not exemplify the use of the inorganic fine particles as recited in instant claims 1, 6, and 17. However, as discussed above, Hashimoto's developers comprise an externally added hydrophobic silica powder.

Suzuki teaches developers comprising toner particles combined with (1) monodisperse hydrophobic spherical silica particles B obtained by a sol-gel method having an average particle size of 80 nm; and (2) inorganic particles having an average particle size of 35 nm. The discussions of Suzuki and applicants' admission I in paragraph 10 above are incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Suzuki, to use the

hydrophobic spherical silica particles B and metatitanic acid inorganic particles taught by Suzuki as the external additive in the developers disclosed by Hashimoto. That person would have had a reasonable expectation of successfully obtaining color developers having satisfactory toner flowability, charging property, the developing property, the transferring property, and the fixing property for a long period of time. It also would have been obvious for that person to use the resultant developers in the image forming apparatus and image forming method disclosed by Hashimoto. That person would have had a reasonable expectation of successfully obtaining an image forming apparatus and image forming method that provides satisfactory toner images for a long period of time.

15. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nukada combined with Hashimoto and Suzuki, as evidenced by applicants' admission I.

Nukada discloses a process cartridge as described in paragraph 6 above, which is incorporated herein by reference.

Nukada does not disclose the use of a developer as recited in the instant claims. However, as discussed in paragraph 6 above, Nukada discloses that the developing unit may comprise a developer comprising a toner and a carrier.

The combined teachings of Hashimoto and Suzuki, as evidenced by applicants' admission I, render obvious a developer as described in paragraph 14 above, which is incorporated herein by reference. The developer meets the developer limitations recited in instant claims 12-15. In addition, according to Hashimoto, its color developers have good low-temperature fixability and storage stability, and also good continuous image forming characteristics. Col. 5, line 66, to col. 6, line 1; and Table 1, toner particles A2 through A4.

It would have been obvious for a person having ordinary skill in the art to use the developer rendered obvious over the combined teachings of Hashimoto and Suzuki as the developer in the process cartridge disclosed by Nukada. That person would have had a reasonable expectation of successfully obtaining a process cartridge that provides satisfactory continuous toner images for a long period of time.

16. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Mr. Nam Nguyen, can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Janis L. Dote
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PRIMARY EXAMINER
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JLD
Jul. 12, 2006